

## Original Research Article

# Prevalence of overweight and obesity among high school girls in Ardabil, Iran

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### ABSTRACT

**Background:** Overweight and obesity and its problems are the most important health and nutrition issues of adolescents in developed countries. This study aimed to determine prevalence of overweight and obesity among high school girls in Ardabil.

**Methods:** As a cross sectional study height, weight, waist circumference and hip circumference were measured. BMI and WHR were used to assess the overweight and obesity. Data analysed by statistical methods in SPSS.19.

**Results:** The mean age of students was  $16.6 \pm 1.1$  years. 0.25 of students were in age 16. According to BMI, 8.8% of all students have overweight. According to the WHR, 72 (35.1%) had WHR  $>0.8$  which were in unhealthy high risk group.

**Conclusions:** Results showed that the rate of overweight and obesity in high school girls in Ardabil was lower than many studies in country. So, programming for rising their knowledge about obesity related factors and increasing their physical activity and modify feeding behaviour is essential.

**Keywords:** Ardabil, High school girls, Overweight, Obesity

### INTRODUCTION

Changes as a result of the advancement of civilization and the use of new technologies have emerged in human life, faced human with diseases that in the past have fewer incidences. Complications from diseases such as obesity which affect both the individual and the community and sometimes remain at the end of human life and considered as a constant threat to his health in future. Obesity is a disease which many diseases, including diabetes, hypertension, stroke, cardiovascular disease and some cancers are the direct and indirect of its side-effects. Obesity and its problems is the most important health and nutrition issues of adolescents in developed countries.<sup>1,2</sup> Currently obesity in developed and developing countries is widespread and these conditions affect both infants and adolescents in society

and increasing the obesity in adolescents is considered as a health issue in the entire world. In past two decades, the rate of obesity and overweight had been increased and involvement millions of people in world. According the WHO report, about 2 billion people in world have overweight and among them more than 600 million are obese. Results show the increasing trend of obesity in infants and adolescents in more countries and obesity in these age groups is one of the health issues in this decade.<sup>3-5</sup>

In recent years, due to the spread of obesity especially in infant and adolescents, Researchers have prompted numerous investigations regarding the factors associated with obesity in children and youth. Results showed that Prenatal and early years of life are effective in obesity occurrence in childhood and adolescence. Researches

showed that hormonal factors, genetic, Metabolic and behavioral factors have relation with obesity.<sup>6-8</sup> Obesity in infants and adolescents was more related to change in their life style and in the meantime, the rate of physical activity, time of watching TV and game with computer and other electronic devices, sleeping time and have sleeping order are defined as effective factors in obesity among infants and adolescents.<sup>9-11</sup>

According studies in Iran the prevalence of overweight and obesity in infants and adolescents were 1.2-24% and 1-28%, respectively.<sup>1,12-18</sup>

Shahidi et al in a study showed that obesity in adolescents is the most problem in developed countries among age groups 12-17 years. Today at least 27% of infants and 21% of adolescents are obese which show the increasing rate of obesity about 54% in infant and 39% in adolescent in two recent decades.<sup>11</sup>

Researchers showed that using some of foods such as low-fat and fiber-rich foods as well as meat and saturated fats had a significant relation with the prevalence of obesity and abdominal obesity.<sup>9-11</sup>

Given the importance of overweight and its effect on high school students lifestyle and habits change, the aim of this study was to access the prevalence of overweight and Obesity in high school girls of Ardabil.

## METHODS

This is a descriptive-cross sectional study that has been done on 200 high school girls selected randomly from Ardabil city high schools in 2014. Data collected for all students by interview and we used balance for measure weight and sewing meter for measure height and then calculate BMI and also, waist and hips for calculate the WHR. BMI between 25 to 29.9 considered as overweight and more than 30 was considered general obesity. Waist-to-hip ratio (WHR) more than 0.8 considered as central obesity. Collected data analyzed by statistical methods in SPSS.19.

## RESULTS

The mean age of students was  $16.6 \pm 1.1$  years. 0.25 of students were in age 16.

**Table 1: The BMI in students by age groups.**

BMI age (years)	Underweight	Normal	Overweight
15	6 (20)	31 (19.7)	3 (16.7)
16	10 (33.3)	45 (28.7)	7 (38.9)
17	8 (26.7)	31 (19.7)	4 (22.2)
18	6 (20)	50 (31.8)	4 (22.2)
<b>Total</b>	<b>30 (14.6)</b>	<b>157 (76.6)</b>	<b>18 (8.8)</b>

According to BMI, 8.8% of all students have overweight. Of all overweight students, most of them with 28.9% were in age 16 years (Table 1).

**Table 2: WHR by age groups.**

WHR age (years)	normal	Overweight
15	26 (19.5)	14 (19.4)
16	35 (26.3)	27 (37.5)
17	27 (20.3)	16 (22.2)
18	45 (33.8)	15 (20.8)
<b>Total</b>	<b>133 (64.9)</b>	<b>72 (35.1)</b>

According to the WHR, 72 (35.1%) had WHR >0.8 which were in unhealthy high risk group (Table 2). The rate of central obesity in age 16 was the most but no significant difference between all age groups.

**Table 3: The relation between BMI and WHR.**

WHR BMI	Normal	Overweight
Underweight	24 (18)	6 (8.3)
Normal	100 (75.2)	57 (79.2)
Overweight	9 (6.8)	9 (12.5)
<b>Total</b>	<b>133 (64.9)</b>	<b>72 (35.1)</b>

Of all students, 9 (4.4%) have both overweight and central obesity and from all students which have central obesity most of them have normal BMI (79.2%) but the relation between BMI and WHR is not statistically significant (Table 3).

## DISCUSSION

The current study between Ardabil high school girls showed that according to the WHR, 72 students (35.1%) have central obesity which from them 27(37.5%) were in age 16 years. According to the BMI, 18 high school girls (8.8%) have overweight and none of students haven't general obesity. Hemmati and et al in a study showed that in high school girls in Urmia the rate of Underweight, overweight and obesity were 2.9%, 20.5% and 10.9%, respectively which in compare with our study the prevalence of Underweight was low but the rate of overweight and obesity in our study was lower than this study.<sup>3</sup>

In a study by Shkeri and et al in 2011 in Tehran, the rate of overweight and obesity in girls was reported 14% and 4.3% orderly that the age group 14 and more have the most rates of obesity and overweight. Mahmoudi and et al in a study showed that the rate of overweight and obesity in adolescent were 15.1% and 9.1%. The result of Bazhen study showed that 14.8%, 5.3% and 21.5% of high school students have overweight, obesity and central obesity, respectively which lower than our study rates.<sup>19-21</sup>

In another study done by Taheri in Birjand, 7.3%, 8.2% and 13.2% of adolescents have overweight, obesity and central obesity, respectively.<sup>22-23</sup>

Differences between present study and other studies can be related to difference in life style, climate, and nutrition, genetic and environmental conditions in many locations. In a study done by Mohammadpour et al in Bushehr, results showed that the prevalence of obesity, overweight and Underweight in study samples were 7.1%, 14.5% and 2.9%, respectively which in compare to our study was more.<sup>1</sup>

A study in Malaysia on school students showed that the prevalence of overweight/obesity was 9.6% which was lower than present study results.<sup>24</sup>

In Rasht study, the prevalence of obesity and overweight among high school students was 18.6% and 5.9% orderly which was more than present study results.<sup>25</sup>

Study on Lahijan high school girls showed that 14.8% and 5.3% of samples have overweight and obesity which upper than our study rats and the difference can be related to many environmental and genetic factors.<sup>26</sup>

The studies done in other places showed the obesity and overweight rates more than present study which the difference can be multi-factorial. Other studies confirmed that there was a significant correlation between BMI and WHR which was similar to present study results.<sup>27-32</sup>

## CONCLUSION

Results showed that the prevalence of overweight and obesity between Ardabil city high school girls was in lower rate but for prediction of them from obesity in future we could change their life style by training programs for students.

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